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Record of Decision
Initial Remedial Alternative Selection

Site Eau Claire Municipal Well Field
Eau Claire County, Wisconsin

Documents Reviewed

This decision is based on the following documents describing the analysis of cost-effectiveness of remedial alternatives for the Eau Claire Municipal Well Field:

- Focused Feasibility Study, Eau Claire Municipal Well Field, Eau Claire, Wisconsin, CH_2M Hill, April 11, 1985, Attachments 1 and 2
- Summary of Remedial Alternative Selection
- Responsiveness Summary
- Memorandum from Steve Rothblatt, Chief, Air and Radiation Branch to Richard Bartelt, Chief, Emergency and Remedial Response Branch
- Memorandum from Joseph Harrison, Chief, Safe Drinking Water Branch to Richard Bartelt, Chief, Emergency and Remedial Response Branch
- Memorandum from Robert B. Schaefer, Regional Counsel and B. G. Constantelos, Director, Waste Management Division to Valdas V. Adamkus, Regional Administrator
- Letters from C.D. Besadny, Secretary, Wisconsin Department of Natural Resources to Valdas V. Adamkus, Regional Administrator
- Preliminary Hydrogeologic Evaluation, Eau Claire Municipal Well Field, Eau Claire, Wisconsin, CH_2M Hill, April 1985
- Report on Water Treatability - City of Eau Claire, Strand Associates, Inc., May 1984

Description of Selected Remedy

Construct air stripping facilities to remove volatile organic compounds from the contaminated flow (14 million gallons per day [mgd]) from the north well field. The treated water will be discharged into the municipal water treatment plant and distribution system.

Declarations

Consistent with the Comprehensive Environmental Response Compensation and Liability Act of 1980, and the National Contingency Plan (40 CFR Part 300), I have determined that construction of air stripping facilities to treat contaminated water for municipal water system treatment and distribution is a cost-effective initial remedial measure and provides adequate protection of public health, welfare, and the environment. The State of Wisconsin has been consulted and agrees with the approved remedy. In addition, the action will require future operation and maintenance activities to ensure the continued effectiveness of the remedy. These activities will be considered part of the approved action and eligible for Trust Fund monies for a period not to exceed 1 year.

It has also been determined that the action being taken is consistent with permanent remedy at the site, and is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

The U.S. Environmental Protection Agency is continuing its remedial investigation/feasibility study (RI/FS) of the Eau Claire Municipal Well Field to evaluate potential sources of contamination and the hydraulic characteristics of the aquifer in order to evaluate potential remedial actions. If additional remedial action(s) are determined to be necessary, a Record of Decision will be prepared for approval of the future remedial action(s).

June 10th, 1985
Date

Valdas V. Adamkus
Regional Administrator
U.S. EPA, Region V

Narrative Summary

Site Location and Description

The City of Eau Claire is located in northwest Eau Claire County, Wisconsin at the confluence of the Eau Claire River and the Chippewa River. At present, the City water system is supplied by groundwater. The municipal well field, a 500-acre site, is located in the northwest corner of the City on the east bank of the Chippewa River near the Eau Claire County airport. (Figure 1) The Eau Claire municipal well system supplies drinking water to approximately 57,500 residents and to numerous commercial and industrial establishments in the City of Eau Claire and the Town of Washington. Land use in the vicinity of the well field consists of light industry east of the airport and residential areas to the east and south of the well field. The City-owned water system includes 14 active wells, a water treatment facility, and three ground level storage reservoirs.

The two important aquifers in the Eau Claire area are the alluvial sand and gravel deposit and the underlying sandstone deposit. The alluvium is a more important source of water than the sandstone. The alluvium holds a higher quantity of water, and, in the area of the municipal well field, is a significantly more substantial deposit than the sandstone.

The two aquifers, although adjacent, are not considered hydraulically connected. The hydraulic conductivity of the sandstone is estimated to be about three orders of magnitude lower than the sand and gravel deposits. The sandstone is not considered a viable water source because of its low productivity. The city wells draw from the sand and gravel aquifer. There is no other isolated uncontaminated aquifer available as a potential drinking water supply in the municipal well field area.

Sources of natural recharge to the aquifers are local precipitation and infiltration of flood waters along river terraces. In addition, the Chippewa River is a source of groundwater recharge for the municipal well field.

Site History

In March of 1981, as part of the U.S. Environmental Protection Agency (U.S. EPA) Groundwater Supply Survey, the Wisconsin Department of Natural Resources (WDNR) tested the Eau Claire municipal water supply for volatile organic compounds (VOCs).

The following four organic compounds were identified in the municipal water supply: 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, and trichloroethene. The WDNR informed the City that none of the compounds were detected in the finished water at levels to be of immediate concern.

In light of the EPA groundwater survey, the DNR district office conducted additional testing in January 1982 on the City's active production wells. The samples from all but one well reported VOC concentrations at low or trace levels. Two of the wells sampled (Well Nos. 11 and 15) exceeded Wisconsin health advisories for potable water supplies for 1,1-dichloroethene. However, due to the blending with the other wells, the contamination in the finished water was below the health advisories.

Concerned for the future use of the water supply, the City retained E.A. Hickok and Associates in May 1982 to conduct a hydrogeological well field study identifying the quantity and quality of water expected for the next 20 years. In September 1982, the City requested that Hickok and Associates conduct additional hydrogeological testing to identify the source and extent of VOC contamination in the well field. In addition, Strand Associates, Inc., was retained to evaluate various treatment alternatives for the removal of VOCs and options to improve iron and manganese removal. Concurrently, the City also upgraded laboratory equipment to provide capabilities for VOC analyses for monitoring of municipal and residential wells.

With the new laboratory equipment, the City began testing private residential wells, in addition to monitoring the municipal production wells. Residential wells located on the north side of Eau Claire and in Town of Hallie, located immediately northwest of Eau Claire, were sampled to gather background information defining the extent and to assist in identifying potential sources of the VOC contamination. Several residential wells reported detectable levels of VOCs.

As a result of the residential well sampling, the City informed Mr. Donald Hillman that samples collected from his well on January 12, 1983, indicated a 1,1-dichloroethene concentration in excess of the WDNR health advisory level. The City advised Mr. Hillman not to use his water supply for drinking. Mr. Hillman's well is upgradient of the municipal well field in the suspected path of groundwater flow.

By Spring of 1983, WDNR had nominated the municipal well field as a potential Superfund site. On September 11, 1984, the Eau Claire Municipal Well Field was included on the Superfund National Priorities List. The Eau Claire site was given a high priority by the WDNR because it affects a large population and because the contaminants have a high toxicity and persistence in the groundwater.

In May 1984, Strand Associates submitted their report on Water Treatability for the City of Eau Claire and recommended a packed tower aeration system for VOC removal. A pilot air stripping column was constructed in the Summer of 1984 to study the effectiveness of a packed tower. The preliminary test results indicate that this pilot system successfully removes VOCs from the water supply.

In addition to monitoring the private residential and municipal production wells, the DNR began to investigate the potential sources of groundwater contamination in Eau Claire. In the Summer of 1984, DNR representatives investigated VOC handling of 22 commercial establishments by inspecting the facilities and interviewing the owners. Of these, the DNR identified nine that it determined were potential sources of contamination based on operational information developed through the investigation.

Since the original March 1981 sampling, the following organic compounds have also been detected in the municipal well field and/or residential wells in the area by the City of Eau Claire and/or U.S. EPA: tetrachloroethene, 1,2-dichloroethene, and 1,2-dichloroethane. The compounds 1,2-dichloroethene and 1,2-dichloroethane have been detected at low or trace levels in the well field. The highest detected concentration of tetrachloroethene detected in the well field is listed below.

The U.S. EPA began its remedial investigation (RI) in January, 1985. Field work should be fully underway in Summer, 1985.

As part of the RI, U.S. EPA contractors conducted a Preliminary Hydrogeologic Evaluation. The report evaluates and summarizes available data for the Eau Claire area, focusing on the geology, groundwater hydrology, and climatic conditions. The report suggests that an alluvial bedrock channel runs through the Eau Claire area, and the contaminant plume may be following the channel, moving north and west towards the Chippewa River. Data collected thus far shows a pattern of VOC contamination along this bedrock channel (Figure 2).

Current Site Status

The highest concentrations of those organic compounds frequently detected on or near the site are:

1,1,1 - Trichloroethane	- 188 ug/l
1,1 - Dichloroethene	- 20 ug/l
Trichloroethene	- 34.6 ug/l
Tetrachloroethene	- 17.1 ug/l
1,1 - Dichloroethane	- 10.3 ug/l

These concentrations of contaminants were detected in test wells in the municipal well field.

Contaminated wells appear to be confined to two areas. Municipal wells 11, 15, 16, and 17 in the northern part of the municipal well field, and two private wells (D. and J. Hillman), have shown the highest levels of VOC contamination. The other main area of groundwater contamination is approximately two and one half miles west of the municipal well field, and several wells up to one half mile to the north of that area. The contaminated wells are generally limited to areas of thickest alluvium.

Toxicity of Pollutants

Three of the identified compounds at the Eau Claire site (1,1-dichloroethene, trichloroethene, and tetrachloroethene) are suspected human carcinogens. The Safe Drinking Water Act establishes Recommended Maximum Contaminant Levels (RMCLs) for non-threshold toxicants such as carcinogens to be zero. RMCLs are health goals, not regulatory limit requirements.

The U.S. EPA Cancer Assessment Group (CAG) has established cancer risk levels for the suspected carcinogens found at Eau Claire. The 1×10^{-6} cancer risk levels, as established by the U.S. EPA CAG, are listed below for these compounds.

1,1-Dichloroethene	0.19 ug/l
Trichloroethene	1.5 ug/l
Tetrachloroethene	0.82 ug/l

The 10^{-6} cancer risk level represents the estimated contaminant concentration in drinking water which would result in an additional incident of cancer per million people. The cancer risk levels assume ingestion of two liters per day of drinking water for 70 years. Drinking water is considered acceptable for consumption if it does not exceed the 10^{-6} cancer risk level.

It can be seen that the concentrations of 1,1-dichloroethene, trichloroethene, and tetrachloroethene have been detected at concentrations more than an order of magnitude greater than the 10^{-6} cancer risk level, or more than the 10^{-5} cancer risk level.

Threat to Public Health

The contaminants in the groundwater at the Eau Claire site present a threat to the public health. Approximately 57,000 people are potentially affected. The public is exposed to the contaminants (discussed above) from the treated and distributed groundwater. There are three primary exposure routes: ingestion of water, dermal absorption from bathing, and inhalation of vapors released from the water during bathing and other uses.

The contaminants present at Eau Claire are chlorinated compounds. Chlorinated compounds are irritants to the eyes and/or mucous membranes. They are highly or moderately toxic via oral (drinking water) and/or inhalation routes. Of the above three primary exposure routes due to contaminated tap water, current knowledge and data limit a quantitative risk estimation to a calculated cancer risk estimation due to ingestion only.

The Agency prepared an endangerment assessment in the Focused Feasibility Study (FFS) for the Eau Claire site (Chapter 4). The purpose of the endangerment assessment was to estimate the risk posed by the suspected human carcinogens, 1,1-dichloroethene, trichloroethene, and tetrachloroethene. This calculated risk does not account for the risk associated with the compounds not identified as suspected carcinogens (1,1,1-trichloroethane and 1,1-dichloroethane) and, in this sense, may be an underestimate.

Both current and future health risk assessments were prepared. The current health risk assessment was calculated for two different conditions: a) finished water - mean contaminant concentration, and b) finished water-maximum contaminant concentration. The calculation for finished water-mean contaminant concentration represents the risk assessment if the current output of the municipal water supply and treatment system is continued. The risk assessment for the maximum contaminant concentration presents a risk based on ingestion of maximum contaminant concentrations observed in the finished water.

At the time of the FFS, the Eau Claire finished municipal water had not been tested for tetrachloroethene. Therefore, tetrachloroethene could not be accounted for in this part of the risk assessment. Tetrachloroethene has been detected in test wells in the municipal well field and may be present

in the finished municipal water. The total present risk presented may be an underestimate due to lack of information about tetrachloroethene in the finished municipal water.

The future health risk was calculated for two different conditions: a) future finished water assuming complete contamination of the north well field and, b) future finished water assuming complete contamination of the north well field and a 25 percent increase in contaminant concentration.

The concentrations of contaminants in "future finished water assuming complete contamination of the north well field" were determined by assuming: 1) the nine north well field wells were contaminated at the maximum contaminant concentrations ever detected in the north well field and the entire south well field was contaminated at the maximum contaminant concentration ever detected in the south well field, and 2) the water from both well fields was blended in a proportion as typical of past practices.

Table 1 summarizes the calculated health risks calculated in the FFS endangerment assessment.

As presented in Table 1, the current health risk for drinking Eau Claire city water approaches, and likely exceeds, the 10^{-5} cancer risk level. (The 10^{-5} cancer risk level represents the estimated contaminant concentration in drinking water which would result in an additional incident of cancer per 100,000 people.) Furthermore, future health risk assessments indicate that if the Eau Claire Well Field continues to worsen in contamination, the public health risk will further increase.

Pursuant to Agency Policy the 10^{-5} cancer risk level for drinking water is the action level for initial remedial measure implementation. At this level of contamination, the threat to public health is considered great enough to warrant taking initial measures before final remedial measure(s) are implemented.

Alternatives Evaluated

The National Contingency Plan states that initial remedial measures (IRM) can and should begin if such measures are determined to be feasible and necessary to limit exposure or threat of exposure to a significant health or environment hazard, and if such measures are cost-effective [40 CFR 300.68(e)(1)]. Pursuant to Agency policy, the IRM should also be compatible with any long-term remedial measure that may be developed at a later date.

The primary objective of the Eau Claire IRM is to protect public health by providing a reliable supply of safe, potable water to those consumers currently dependent on the Eau Claire Municipal Well Field. The long-term remedial measure(s) will likely provide for cleanup of the groundwater in the municipal well field. The selected remedy achieves the primary objective and works towards the likely final remedial measure(s).

Fifteen alternatives were examined as potential IRMs at Eau Claire. They were evaluated in terms of their ability to protect public health and their technical feasibility/implementability. If either one of these criteria would not be met to at least a moderate degree, the alternative was eliminated from further consideration. Table 2 summarizes the screening procedure. The following alternatives were advanced to further screening: well

Table 1 - Risk Assessment Summary

Finished Water - Mean Contaminant Concentrations	Tetrachloroethene	---
	Trichloroethene	2×10^{-6}
	1,1-Dichloroethene	5×10^{-6}
	Total	7×10^{-6}
Finished Water - Maximum Contaminant Concentration	Tetrachloroethene	---
	Trichloroethene	3×10^{-6}
	1,1-Dichloroethene	8×10^{-6}
	Total	11×10^{-6} (1×10^{-5})
Finish Water - Complete Contamination of North Well Field	Tetrachloroethene	10×10^{-6}
	Trichloroethene	10×10^{-6}
	1,1-Dichloroethene	60×10^{-6}
	Total	80×10^{-6} (8×10^{-5})
Finished Water - Complete Contamination of North Well Field and a 25 percent increase in contaminant concentration	Tetrachloroethene	10×10^{-6}
	Trichloroethene	20×10^{-6}
	1,1-Dichloroethene	70×10^{-6}
	Total	100×10^{-6} (1×10^{-4})

Table 2
PRIMARY SCREENING
PUBLIC HEALTH AND TECHNICAL FEASIBILITY CRITERIA

Initial Alternatives	Ability to Protect Public Health	Technical Feasibility/ Implementability	Comments
No action	Poor	NA	No increase in protection of public health without some action
Well field management	Moderate	Moderate	Advanced to secondary screening
Air stripping of contaminated wells using packed tower aeration	Good	Good	Advanced to secondary screening
Air stripping of contaminated wells using diffused aeration	Good	Good	Advanced to secondary screening
Granular activated carbon treatment of contaminated wells	Good	Good	Advanced to secondary screening
Chemical treatment of contaminated wells	Poor	Poor	Eliminated; not effective in removing organics
Reverse osmosis treatment of contaminated wells	Poor	Poor	Eliminated; imperfect with respect to organic separations, concentrate stream developed and pretreatment requirement
Ion exchange treatment of contaminated wells	Poor	Poor	Eliminated; not effective in removing organics
Steam stripping of contaminated wells	Good	Good	Advanced to secondary screening
Biological treatment of contaminated wells	Poor	Poor	Eliminated; bacteria ineffective in removing organics present, removal of organics to concentrations required impractical

Table 2 (Continued)

Initial Alternatives	Ability to Protect Public Health	Technical Feasibility/ Implementability	Comments
Connect to another water system	Good	Poor	Eliminated; no other water system available
Drill new wells	Moderate	Good	Advanced to secondary screening
Deepen existing wells	Moderate	Poor	Eliminated; no lower, isolated aquifer available
Bulk water delivery and storage	Moderate	Poor	Eliminated; not practical for meeting water system requirements
River water intake	Good	Good	Advanced to secondary screening

NA-Not Applicable

field management, air stripping of contaminated wells using packed tower aeration, air stripping of contaminated wells using diffused aeration, granulated activated carbon treatment of contaminated wells, steam stripping of contaminated wells, drill new wells, and river water intake.

Table 3 outlines initial alternatives advanced for further screening and the criteria upon which they were evaluated. In addition to ability to protect public health and technical feasibility/implementability, these alternatives were subject to the following screening criteria: compatibility with further remedial measures, relative costs, environmental effects, reliability, time required to implement, and community impacts. The following alternatives were advanced for detailed analysis and further screening: well field management, air stripping of contaminated wells using packed tower aeration, and drill new wells. The three alternatives advanced for further screening were developed into potential IRM alternatives.

Alternative 1. Well Field Management/No Treatment

Alternative 1 strictly utilizes well field management techniques to meet the objectives of the IRM. In this alternative a barrier is created to prevent contaminated groundwater from migrating into the uncontaminated areas of the well field. The barrier is created using blocking wells and the existing contaminated production wells. New production wells would be constructed to replace system capacity lost when the existing contaminated production wells were committed to plume control. Contaminated water pumped from the blocking wells and the four contaminated production wells would be discharged directly to the Chippewa River without treatment.

Alternative 2. Well Field Management/Treatment

Alternative 2 incorporates aspects of both the well field management and the treatment alternatives.

Alternative 2 involves using blocking wells and the existing contaminated wells to adjust the hydraulic gradient of the groundwater table and effectively protect the uncontaminated areas of the well field. Contaminated groundwater removed by the blocking wells would be discharged to the Chippewa River. Groundwater removed by the contaminated production wells, however, would be treated by air stripping to remove the VOCs and subsequently discharged into the municipal water treatment and distribution system. The air stripping system would provide capabilities for stripping 5.7 mgd of contaminated groundwater.

The aeration treatment system would be designed to achieve 99.6% removal of the critical contaminant 1,1-dichloroethene. (The contaminant 1,1-dichloroethene is designated the critical contaminant because it is the most difficult, of the contaminants present at Eau Claire, to treat with the air stripping technology.) This removal efficiency would provide finished water at less than a cumulative 1×10^{-6} excess lifetime cancer risk. The system would be designed to treat water within influent volatile organic concentrations of 1.25 times the maximum reported concentration in any production well or test well found in the north well field.

Table 3 SECONDARY SCREENING

Initial Alternatives	Ability Protect Public Health	* Compatibility	Technical Feasibility/ Implementability	Relative Costs	Environmental Effects	Reliability	Time Required to Implement	Community Impacts	Conclusion of Initial Screening
Well field management	Moderate	Good	Moderate	Moderate	Low	High	1-6 mos.	Low	Advanced to detailed analysis
Air stripping of contaminated wells using cked tower aeration	Good	Good	Good	Moderate to High	Moderate	High	3-6 mos.	Low	Advanced to detailed analysis
Air stripping of contaminated wells using diffused aeration	Good	Good	Good	High	Moderate	High	3-6 mos.	Low	Eliminated; comparable to stripping with a packed tower except more costly
Granular activated carbon treatment of contaminated wells	Good	Good	Good	High to Very High	Moderate	High	2-3 mos.	Low	Eliminated; very costly for quantity of water that must be treated
Steam stripping of contaminated wells	Good	Good	Good	High	Moderate	High	3-6 mos.	Low	Eliminated; comparable to stripping with a packed tower except more costly
ill new wells	Moderate	Good	Good	Moderate	Low	High	2-3 mos.	Low	Incorporated with well field management alternative and advanced
River water intake	Good	Poor	Good	Very High	Moderate	High	>1 year	Low	Eliminated; very costly, long implementation, inconsistent with ultimate remedial action

*Compatibility with further remedial measures which may be implemented at a further date.

Alternative 3. Treatment

Alternative 3 would provide treatment for the contaminated groundwater supplied by the north well field (14 mgd).

Alternative 3 involves providing air stripping facilities to remove VOCs from the contaminated flow from the north well field (14 mgd). Since blocking wells are not part of this alternative, the plume of contamination may migrate, thus contaminating the remaining north well field. The facilities will be sized to strip sufficient water to meet water system requirements when coupled with the remaining uncontaminated wells assuming contamination of the entire north well field. The air stripped water would be discharged into the municipal water treatment plant and distribution system. No discharge of contaminated water to the river would be necessary.

As in Alternative 2, the aeration treatment system would be designed to achieve 99.6% removal of the critical contaminant 1,1-dichloroethene. (The contaminant 1,1-dichloroethene is designated the critical contaminant because it is the most difficult, of the contaminants present at Eau Claire, to treat with the air stripping technology.) This removal efficiency would provide finished water at less than a cumulative 1×10^{-6} excess lifetime cancer risk. The system would be designed to treat water with influent volatile organic concentrations of 1.25 times the maximum reported concentration in any production well or test well found in the north well field.

Selection Process

The three developed alternatives identified above, along with the no action alternative were further evaluated, in accordance with the NCP. (See Table 4, for a costs summary of the three developed alternatives, including present worth cost estimates.) Pursuant to the NCP, the Agency evaluated the remedies to determine the appropriate cost-effective remedy.

During the early stages of the alternatives review, the no action alternative was eliminated from further consideration. In part, the decision was based upon an evaluation of the health risks posed by the presence of VOCs in the Eau Claire drinking water and a recognition of the unlikelihood of a natural reduction in the amounts of these compounds in the city water.

Until the remedial investigation for the Eau Claire site is completed, the complete nature and extent of the contamination of the well field is unknown. The implementation of an appropriate IRM will minimize and mitigate the contamination of the Eau Claire water supply system and reduce the associated health threat to those dependent on the water supply system. Without the implementation of an initial measure, the users of the system are exposed to an unacceptable health risk. (See discussion of health risks in Threat to Public Health section above.) Therefore, the no action alternative is not appropriate.

The remaining three alternatives are relatively comparable in terms of the screening criteria used to select the appropriate IRM for the Eau Claire site. Table 5 summarizes the screening criteria comparison of the three developed alternatives. Nine criteria were used in this comparison. Each alternative was screened in terms of: ability to protect public health, compatibility with final remedial measures, technical feasibility and

TABLE 4 --- COSTS SUMMARY

	Alternative 1	Alternative 2	Alternative 3
Capital Costs	$1,550,000	$1,780,000	$1,420,000
Annual O&M	$95,300	$133,000	$195,000
5 yr Present Worth	$1,911,000	$2,284,000	$2,160,000
Present Worth Index	1.00	1.20	1.13

implementability, relative economic costs, environmental effects, aesthetics, reliability, time of implementation, and community impacts. The ability to protect the public health is the criterion of primary importance.

Alternative 3 is superior to Alternatives 1 and 2 in terms of public health protection. Alternatives 1 and 2 incorporate the use of a system of blocking wells to prevent the plume of contamination from migrating further into the well field. Blocking well systems are used in similar situations and are considered a capable technology. These systems are, however, difficult to implement because of uncertainties in subsurface geology. The air stripper required in Alternative 3 is easily implemented because it is a well-known, fully man-made system. Success of the air stripper is not dependent on a good understanding of the subsurface geology. The easy implementability and high expectations for successful operation of Alternative 3 reflects it as better than Alternatives 1 and 2 for public health protection.

In terms of economic cost, all three alternatives are within 20 percent of each other. As such, this screening criteria does not indicate a preference for any given alternative.

The other screening criteria do not identify any significant differences between the three alternatives. No significant environmental effects or community impacts are expected from any alternative. All three alternatives should be able to be implemented quickly enough to meet 1986 Summer water demands. The major components that make up the three alternatives are considered highly reliable. All three alternatives work towards the likely final remedial measure of restoration of the groundwater in the area of the municipal well field. The slight differences with respect to these screening criteria are outlined in Table 5.

Community Relations

The Superfund activities at the Eau Claire Municipal Well Field site have been followed closely and consistently by the local press. Interest in Superfund activities has been high. News accounts of the activities have been accurate. The public in Eau Claire has indicated that they feel that all officials involved (city, city-county, state, and federal) have responded promptly and properly to the groundwater contamination.

Copies of the FFS were made available to the community on April 15, 1985. The Eau Claire City Hall and Eau Claire Public Library served as repositories. The U.S. EPA issued a press release on April 10, 1985, which announced the April 15 availability of the study of the April 15 - May 6 public comment period. The press release announced a U.S. EPA press conference which was held in Eau Claire City Hall on the afternoon of April 18, 1985, and a U.S. EPA question and answer session about the project on the evening of April 18, 1985.

The press conference was well-attended by the local newspaper, television, and radio stations. Coverage of the U.S. EPA news releases by the press was extensive. The evening question and answer session was attended only by State and City officials, the press, and one local industry representative. No other Eau Claire residents attended the session.

Table Five
EVALUATION SUMMARY

Alternative Identification	Alternative 1	Alternative 2	Alternative 3
	Well Field Management	Well Field Management/Treatment	Treatment
	Five (5) new blocking wells	Five (5) new blocking wells	
	Continuous pumping of four (4) existing contaminated wells	Continuous pumping of four (4) existing contaminated wells	
	Three (3) new production wells	Air stripping system in the north well field for 5.7 mgd	Air stripping at the water treatment plant for 14 mgd
Criteria			
Ability to Protect Public Health	Dependent on limiting migration of contaminants	Dependent on limiting migration of contaminants	
	If north well field becomes contaminated, 9.0 mgd of safe water could be delivered by the municipal well field[a]	If north well field becomes contaminated, 14.7 mgd of safe water could be delivered by the municipal well field[a] and treatment system	If north well field becomes contaminated, 23 mgd of safe water could be delivered by the municipal well field[a] and treatment system
Compatibility with Final Remedial Measures*	Proposes to limit spread of contaminants into well field	Proposes to limit spread of contaminants into well field	Allows for possibility of migration of contaminants into slightly contaminated and uncontaminated areas of well field
	Proposes to discharge approximately 10 mgd of contaminated groundwater into the Chippewa River	Proposes to discharge approximately 4.3 mgd of contaminated groundwater into the Chippewa River	No provisions for discharge of contaminated groundwater into the Chippewa River
	No provisions for treatment of contaminated groundwater	Provisions for treatment of 5.7 mgd of contaminated groundwater	Provisions for treatment of 14 mgd of contaminated groundwater

* Final remedial measures will likely provide for cleanup of the aquifer in the city well field.

Criteria	Alternative 1	Alternative 2	Alternative 3
Technical Feasibility and Implementability	Proven, capable technology	Proven, capable technologies	Proven, capable technology
	Variability in subsurface conditions make design of blocking well barrier difficult	Variability in subsurface conditions makes design of blocking well barrier difficult	Air stripper is a well known, easily controlable technology
		Site specific pilot data on the air stripping process may help optimize stripping tower design	Site specific pilot data on the air stripping process may help optimize stripping tower design
	Permit required for discharge of contaminated groundwater to Chippewa River	Permit required for discharge of contaminated groundwater to Chippewa River	No river discharge permit required
		Air emissions discharge permit not required	Air emissions discharge permit not required
	Acquisition of easements may be required if part of the blocking well barrier is located on private property	Acquisition of easements may be required if part of the blocking well barrier is located on private property	No acquisition of easements required
Relative Costs			
Present Worth [b,c]	$1,911,000	$2,284,000	$2,160,000
Present Worth Index	1.00	1.20	1.13
Environmental Effects			
Water Quality	No significant water quality impact as a result of discharging approximately 10 mgd of contaminated groundwater to the Chippewa River	No significant water quality impact as a result of discharging approximately 4.25 mgd of contaminated groundwater to the Chippewa River	No water quality impact; no discharge of contaminated water

Criteria	Alternative 1	Alternative 2	Alternative 3
Air Emissions	No impact on air quality, no stripping of VOC's required	Future organic air emissions conservatively estimated at 5.34 lbs/day	Future organic air emissions conservatively estimated at 13.09 lbs/day
		Total influent organic load (lbs/day) would have to increase approximately thirteen fold above current conditions before air emissions control would be required	Total influent organic load (lbs/day) would have to increase approximately nine fold above current conditions before air emissions control would be required
		Extremely remote possibility that organic emissions would exceed 15 lbs/day, necessitating air emissions control	Remote possibility that organic emissions would exceed 15 lbs/day, necessitating air emissions control
Aesthetics			
Water Quality	Potential degradation of raw water quality due to increased iron and manganese concentrations due to potential changes in aquifer hydraulic characteristics as a result of installation of blocking well system	Potential degradation of raw water quality due to increased iron and manganese concentrations due to potential changes in aquifer hydraulic characteristics as a result of installation of blocking well system	
Visual	Minor short-term impact relating to construction of new wells and water discharge piping	Minor short-term impact relating to construction of new wells, discharge piping, and air stripping system	Insignificant short- and long-term impact relating to siting of air stripping system at water treatment plant

Criteria	Alternative 1	Alternative 2	Alternative 3
	No significant long-term impact	Minor long-term impact relating to siting of air stripping system in park setting of the municipal well field	
Reliability	High reliability, provides 20.3 mgd of safe water with one production well out of service	High reliability, provides 19.2 mgd of safe water with one stripping tower out of service	High reliability, provides 18.0 mgd of safe water with one stripping tower out of service
ime Required to Implement	Ample time to implement to meet 1986 summer water demands that approach maximum daily demand	Ample time to implement to meet 1986 summer water demands that approach maximum daily demand	Ample time to implement 1986 summer water demands that approach maximum daily demand
	28-38 weeks from initiation of design to system startup	35-42 weeks from initiation of design to system startup	33-42 weeks from initiation of design to system startup
Community Impacts	No adverse community impacts	No adverse community impacts	No adverse community impacts

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[a]Assumes uncontaminated wells outside of north well field would remain uncontaminated.
[b]Based on using five blocking wells to create barrier in contaminant plume.
esent worths for Alternatives 1, 2, and 3 are $2,131,000, $2,468,000, and $2,160,000 respectively, assuming a conservative design approach using eight blocking wells.

The Responsiveness Summary to the public comment is attached to this Narrative Summary.

Consistency with Other Environmental Laws

All three proposed alternatives are consistent with other Federal and State environmental laws. The Wisconsin State Implementation Plan (SIP) establishes air emission limits for the release of VOCs into the ambient air. The Wisconsin Administrative Codes NR 147.02 regulates the limit for discharges of contaminated water into the Chippewa River. The WDNR and U.S. EPA evaluated Alternatives 1, 2, and 3 in terms of potential compliance with these regulations.

Alternatives 1 and 2 would result in the discharge of contaminated groundwater into the Chippewa River. The estimated discharges would be approximately 10 mgd for Alternative 1 and approximately 4.25 mgd for Alternative 2.

The WDNR did a preliminary assessment to evaluate the contaminated groundwater discharges in light of U.S. EPA 1980 water quality criteria for protection of aquatic life. The impact of the discharge was compared with acute and chronic toxicity levels where specific limits were available. Preliminary findings showed the maximum contaminant concentrations in the discharges estimated in Alternatives 1 and 2 to be significantly below any of the defined criteria, prior to dilution by the river flow. In light of the findings of this initial assessment, WDNR concluded that treatment of the contaminated groundwater prior to discharge would not be necessary. If Alternatives 1 or 2 were selected, WDNR would investigate the discharge question in detail and establish a not to exceed discharge limit. A permit would be required for either Alternative 1 or 2 under Wisconsin Regulation NR 147.02, as both alternatives would result in a discharge to a state waterway.

Alternatives 2 and 3 would result in the release of air emissions from the air strippers. The FFS evaluates estimates of potential air emissions from Alternatives 2 and 3. The estimated emissions were developed on both an average case and worst case basis.

The average case basis assumes that the air stripping system will experience raw water influent flows with contaminant concentrations to be equal to the second highest concentrations reported in test wells or production wells in the well field for each compound, except 1,1,1-trichloroethane. For this compound, the two outstanding values (188 and 155 ug/1) were assumed to be atypical, and the next highest value (50 ug/1) was chosen. Under this scenario, it can be anticipated that Alternative 2 would result in 5.34 lbs/day of air emissions and Alternative 3 would result in 13.09 lbs/day of air emissions. Although average future contaminant concentrations and air emissions cannot be predicted to a high degree of certainty, it appears reasonable to assume that the average case estimations are conservative.

The average case air emission estimates are considered conservative because second highest and third highest groundwater contaminant concentrations were assumed to be the influent water quality to the proposed air strippers. These concentrations of contaminants were assumed to have spread uniformly through the entire north well field. Contamination is currently observed above trace levels at fewer than half (four out of nine) of the production

wells in the north well field. Therefore, current average groundwater contaminant concentrations are substantially below those used to estimate average case air emissions.

The worst case estimates assume that the air stripping system will experience raw water influent flows with contaminant concentrations equal to design concentrations (i.e., 1.25 times the maximum reported concentration for each compound ever detected in production or test wells in the well field). Under this scenario it can be anticipated that Alternative 2 would result in 16.05 lbs/day of air emissions and Alternative 3 would result in 39.40 lbs/day of air emissions.

In order to provide compliance with applicable air pollution regulations, it can be anticipated that some type of air emission control system would be required for both Alternatives 2 and 3 under the worst case scenario. The Wisconsin SIP Regulation NR 154.13(11)(1)(4) requires that source VOC emissions cannot exceed 15 lbs/day. Both Alternatives 2 and 3 can be expected to exceed the 15 lbs/day limit in this worst case scenario. In Alternative 2, the total influent organic load (lbs/day) to the stripping tower would have to increase approximately thirteen-fold above the current conditions before air emissions control would be required. In Alternative 3, the total influent organic load (lbs/day) to the stripping tower would have to increase approximately nine-fold above current conditions before air emissions control would be required. U.S. EPA does not currently possess any data to support either a thirteen-fold increase or nine-fold increase in contaminant concentrations. Such an increase would represent a major departure from the increase in contamination seen at this site over the last four years. In the event that such a dramatic increase did occur, air emission control systems would most probably be required. This would result in increased costs for either Alternative 2 or 3. Both air stripping systems could be readily retrofitted with air emission control systems to ensure compliance with the Wisconsin SIP.

Although under a worst case scenario it appears that an air emission control system would be required in Alternatives 2 and 3; under a reasonably conservative scenario of average conditions, air emission controls would not be required by either Alternatives 2 or 3.

Public Health Risk Assessment Due to Air Stripper

U.S. EPA Air Management Division performed a health risk assessment to evaluate the health risks which could arise from the emission of the contaminants as air pollutants if the air stripping technology is implemented as outlined in Alternative 3. The health risk assessment was conducted for both scenarios for predicted air emissions as described above in Consistency with Other Environmental Laws section assuming: 1) influent water flows with contaminant concentrations equal to design concentrations and 2) influent flows with contaminant concentrations to be equal to the second highest reported concentrations, except for 1,1,1-trichloroethane in which third highest reported concentration was used. The memorandum summarizing the results and conclusions of this risk assessment is attached.

The results of the air risk assessment indicate that the public health risk due to the air emissions from an air stripper as proposed in Alternative 3 is of little significance considering the average and worst case air emission estimates discussed above in "Consistency with Other Environmental Laws" at

page 17. Based on the results of the air risk assessment, it can be concluded that a carbon adsorption treatment system for the air emissions would not be necessary to further minimize health risks.

Recommended Alternative

The National Oil and Hazardous Substances Contingency Plan (NCP) [40 CFR Part 300.68(j)] states that the appropriate extent of remedy shall be determined by the lead agency's selection of the remedial measure which the agency determines is cost-effective (i.e., the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment). Based on the evaluation of cost and effectiveness of each proposed alternative, the comments received from the public and the WDNR, and State and Federal environmental requirements, Alternative 3 has been determined to be the cost-effective alternative.

The recommended alternative is considered an initial remedial measure (IRM) as defined in section 300.68(e)(1) of the NCP. An IRM is appropriate because there is contamination of drinking water at the tap. The objective of the action is to provide those consumers currently dependent on the Eau Claire city water with safe, potable drinking water until the final remedial measure(s) may be implemented. The RI/FS currently underway will examine appropriate final response action(s).

The recommended alternative provides for packed tower aeration treatment for 14 mgd of contaminated groundwater. This treatment system would be sized to allow for the possibility of contamination of the entire north well field. Presently four of the nine wells in the north well field are significantly contaminated. Although the origin and migration paths of the VOC contamination are currently undefined, the migration will possibly move in a north and west direction thus presenting potential for further contamination of the remaining north well field.

The aeration treatment system would be designed to treat water with influent volatile organic concentrations of 1.25 times the maximum reported concentration in any production well or test well found in the north well field. The aeration treatment system would be designed to achieve 99.6% removal of the critical contaminant 1,1-dichloroethene. This removal efficiency would provide finished water at less than a cumulative 1 $x10^{-6}$ excess lifetime cancer risk.

The capital cost of this alternative is estimated to be $1,420,000. The operation and maintenance costs are estimated to be $195,000 per year for electric power and operating labor. The five-year present worth value for the recommended alternative is $2,160,000.

It is recommended that EPA fund 90 percent of the O&M costs for a period not to exceed one year after completion of construction. Based on an agreement with the State of Wisconsin, the City of Eau Claire will provide the 10% O&M match for the first year and then assume all O&M for the life of the project.

Recommended Alternative as it Relates to Final Remedy

As discussed above, the National Contingency Plan states that an IRM can and should begin if such measure is determined to be feasible and necessary to limit exposure or threat of exposure to a significant health or environment hazard, and if such measures are cost-effective. 40 CFR 300.68(e)(1). Currently, the Eau Claire Well Field supplies drinking water to over 57,500 residents. The residents are potentially exposed to a variety of VOCs contained in the groundwater system. These compounds (see discussion at page 4, above) are suspected carcinogens.

The two ways to approach a final remedy at this site are minimization and mitigation of the groundwater contamination and use of an alternative water supply. Although the final remedy for this site has not been determined, it appears likely that some type of response to minimize and mitigate the current groundwater contamination will be the final remedy. It is not likely that the final remedy will be use of an alternative water supply. It is likely that the air stripping treatment system will be incorporated into a final remedy selected, as part of minimization and mitigation of the groundwater contamination, depending on results of the ongoing RI/FS.

There are two categories of technologies to address minimization and mitigation of groundwater contamination: treatment and source control. It is likely that the final remedy will be either a treatment type remedy or a source control/treatment type remedy. The air stripping system could be used in either one of these situations.

First, the Agency may utilize the air stripper in a treatment type final remedy to address contamination. In that case, the contamination may be extensive and dilute in the aquifer, such that source control is not a viable alternative. In that case, the only way to minimize and mitigate the groundwater contamination would be through utilization of the air stripping system, which would treat or clean up the groundwater. This would possibly be in conjunction with another treatment type technology.

Second, the Agency may utilize the air stripper as part of a source control/ treatment type remedy at the site. In that case, the air stripper would be utilized to treat or clean up already contaminated groundwater. The clean up effort would be in conjunction with a source control remedy implemented upstream of the groundwater contamination in the Eau Claire Well Field.

Final remedies at the Eau Claire site which do not include minimizing and mitigating the groundwater contamination are very unlikely. The Eau Claire well field is ideally located in that, without the VOC contamination, the quantity and quality of water is good. There is no isolated uncontaminated aquifer in the immediate vicinity that could provide the necessary quantity and quality of water. Similarly, alternative water supplies (i.e., non-groundwater supplies) such as connection with another municipal system and surface water sources have been determined as not feasible for an IRM and will likely be determined as not feasible for a final remedy. There is no system with adequate capacity to make that option technically feasible. The average daily demand for water from the well field for the past three years has not exceeded 9.4 mgd (maximum demand, 19.8 mgd). Therefore, the final remedy will likely include minimizing and mitigating the groundwater contamination, not use of an alternative water supply.

Although the air stripping system may not eliminate the contamination of the well field aquifer, this IRM will minimize the threat posed by the contamination until such time as a final remedy is selected by U.S. EPA. As the RI/FS is currently underway, the extent of groundwater contamination is now being evaluated. Until the evaluation is completed, it is not technically feasible to develop a cost-effective, long term remedy for the site.

Threfore, the IRM will effectively meet two Agency goals. The IRM air stripping system achieves the primary goal of limiting exposure to a significant health threat by providing safe potable drinking water to those citizens currently dependent on the municipal well field. In addition, the air stripping treatment system works towards the likely final remedy of minimizing and mitigating groundwater contamination in the well field by providing treatment for 14 mgd of contaminated groundwater.

State Agreements

Section 104(c)(3) of CERCLA sets forth the State financial responsibilities in remedial actions provided under CERCLA. The State financial responsibilities in the proposed remedial action would include payment or assurance of payment of 10 percent of the costs of remedial action, and assurance of all future maintenance costs of the remedial action.

Although the City of Eau Claire owns and operates the well field, the Agency does not currently possess any information to support a finding that the City of Eau Claire owned the well field at the time of any disposal of hazardous substances. In fact, due to the nature of the contamination i.e., groundwater contamination, U.S. EPA does not currently possess any information to support a finding that any hazardous substances were disposed of on the well field. It is possible that the source of contamination lies beyond the property boundary of the well field. Therefore, this site is currently subject to the 10% match to Federal Superfund monies spent at this site.

The State of Wisconsin Secretary of WDNR has sent the Region V Regional Administrator a letter acknowledging the State financial obligations in this remedial action. The State has received a commitment from the City of Eau Claire to assume all operation and maintenance (O & M) costs of the IRM.

The O & M costs will be covered under a cooperative agreement between the State and U.S. EPA at the completion of construction of the IRM.

Schedule

The REM II contractor CH_2M Hill will manage the design of the IRM. The U.S. Army Corps of Engineers will procure the construction contractor and oversee construction activities. The schedule for design and construction activities is as follows:

IAG with Omaha district USACOE	05/09/85
Approval Remedial Action (Sign ROD)	06/07/85

Hill Submits draft Design Work Plan	06/07/85
Advance Notice to Prospective Bidders in Commerce Business Daily	07/29/85
Hill completes Design	07/31/85
Design reviewed by U.S. EPA, State, & COE	08/12/85
Advertise for Competitive Bids	08/21/85
Open Bids	09/10/85
Contract Award	10/01/85
Notice to Proceed	10/31/85
Estimated Construction Period	22-26 weeks

Future Actions

An RI/FS for the final remedy will be fully underway this summer. The objectives of the RI/FS are to determine the extent of contamination at the site, to determine the hazard potential of the site, and to evaluate potentially feasible remedial actions. The feasibility study will recommend the most cost-effective remedial action(s) for the site.

COMMUNITY RELATIONS RESPONSIVENESS SUMMARY
EAU CLAIRE MUNICIPAL WELL FIELD
EAU CLAIRE, WISCONSIN

The United States Environmental Protection Agency (U.S. EPA) has conducted a Focused Feasibility Study (FFS) to evaluate Initial Remedial Measures (IRM) at the Eau Claire Municipal Well Field, Eau Claire, Wisconsin (EC Well Field). The FFS was completed on April 11, 1985, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601 et seq., and in accordance with the National Contingency Plan (NCP), 40 C.F.R. Part 300. The U.S. EPA recommended that a packed tower air stripping treatment system was the appropriate IRM for the EC Well Field.

The public comment period to review the recommended alternative as well as the FFS opened on April 15, 1985. The U.S. EPA did not receive a request for a Formal public hearing. Upon consultation with the state and local officials, it was determined that a press conference would be appropriate and a conference was held on April 18, 1985 in the Eau Claire City Hall. The results of the FFS were presented to the press. Finally, a public informational meeting was held on the evening of April 18, 1985. The purpose of this meeting was to present the results of the FFS to interested members of the public and answer any questions. Although locally publicized,this meeting was attended by a few State and Local officials, the press, and one area industry representative.

I. SITE BACKGROUND

The EC Well Field, a 500 acre site, is located in northwest Eau Claire County, Wisconsin at the confluence of the Eau Claire River and the Chippewa River. At present, this City Water System is supplied by groundwater. The EC Well Field supplies drinking water to approximately 57,500 residents and to numerous commercial and industrial establishments in the City of Eau Claire and the Town of Washington. The City-owned water system includes 14 active wells, a water treatment facility, and 3 ground level storage reservoirs.

In March of 1981, as a part of the U.S. EPA's Groundwater supply survey, the Wisconsin Department of Natural Resources (WDNR) tested the Eau Claire municipal water supply for volatile organic compounds (VOC). Four organic compounds were identified in the municipal water supply: 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, and trichloroethene. Additional testing continued through 1983 and samples from all but one well reported VOC concentrations at low or trace levels. By the Spring of 1983, WDNR had nominated the EC Well Field as a potential Superfund site. Further testing uncovered the following organic compounds in the EC Well Field or nearby residential wells: tetrachloroethene, 1,2-dichloroethene, and 1,2-dichloroethane. On September 11, 1984, the EC Well Field was included on the U.S. EPA Superfund National Priorities List.

Contaminated wells at the EC Well Field appear to be confined to 2 areas. Municipal wells 11, 15, 16 and 17 in the

northern part of the well field and 2 private wells nearby show the highest levels of contamination.

II. U.S. EPA REMEDIAL RESPONSE ACTIVITIES

The U.S. EPA began a remedial investigation pursuant to CERCLA and the NCP in January, 1985. The purpose of the investigation is to determine the nature and extent of contamination of the EC Well Field. Field work for this investigation should be underway in the Summer of 1985. Due to the fact that over 57,500 residents are currently receiving water from the EC Well Field, U.S. EPA has determined that an initial remedial action to minimize the threat posed by the contamination of the drinking water is appropriate. A Focused Feasibility Study to address the concern regarding drinking water was completed on April 11, 1985.

III. STATUTORY AUTHORITY

Section 104 of CERCLA by delegated authority, enables U.S. EPA to act, consistent with the NCP, to remove or arrange for removal of, and provide remedial action relating to a hazardous substance, pollutant, or contaminant at any time, or take any other response measure consistent with the NCP which is deemed necessary to protect the public health, welfare, or environment. 42 U.S.C. §9604. Consistent with Section 105 of CERCLA, the NCP establishes the methods and criteria for effectuating a response measure that protects the public health, welfare, or environment in a cost-effective manner.

42 U.S.C. §9605. Subpart F of the NCP, 40 C.F.R. Parts 300.61 through 300.71, set forth the criteria for hazardous substance response. Remedial actions are specifically addressed in 40 C.F.R. Part 300.68.

IV. SUMMARY OF ALTERNATIVE CHOSEN BY THE U.S. EPA AS THE APPROPRIATE INITIAL REMEDIAL MEASURE AT THE EAU CLAIRE MUNICIPAL WELL FIELD

The U.S. EPA has determined that the Alternative 3 as identified in the FFS is the appropriate IRM for the EC Well Field. This alternative will provide treatment for the contaminated groundwater supplied by the north EC Well Field. The selected alternative involves providing air stripping facilities to remove organic compounds from the contaminated flow from the north well field. Since blocking wells are not part of this alternative, the plume of contamination may migrate, thus contaminating the remaining north well field. The remedy is therefore being sized to strip sufficient water to meet water system requirements when coupled with the remaining uncontaminated wells. The treated water would be discharged into the municipal water treatment plant and distribution system. No discharge of contaminated water to the river would be necessary.

The currently estimated capital cost of this IRM is $1,230,000. The operation and maintenance of this remedy is expected to cost approximately $195,000 per year.

V. COMMENTS

During the public comment period 4 written comments were received by U.S. EPA. The public comment period closed on May 6, 1985. Two additional comments were received by U.S. EPA after the close of the comment period. Due to the limited number of comments U.S. EPA is responding to each of them.

COMMENT:

The City of Eau Claire commented that it agreed with the U.S. EPA's recommendation to use the packed tower air stripping treatment system.

RESPONSE:

The U.S. EPA acknowledges the support of the City of Eau Claire.

COMMENT:

One commentator asked if the Superfund could be used to drill new city wells in an area of uncontaminated groundwater and thereby deliver safe potable water to the citizens currently dependent upon the Eau Claire Well Field.

RESPONSE:

Yes, the U.S. EPA can theoretically use Superfund monies to drill new city wells.

The feasibility of drilling new city wells in areas of uncontaminated groundwater was evaluated in the FFS, however, this alternative is not feasible in the case of the EC Well

Field. There is only one aquifer in the vicinity of the city well field. The possibility of drilling wells into an isolated, uncontaminated aquifer does not exist. The possibility of drilling new city production wells in an uncontaminated region of the existing aquifer was examined in detail as part of Alternative One in Chapter 6 --- Detailed Alternative Analysis. This alternative was, however, determined less feasible than the recommended packed tower air stripping treatment system.

COMMENT:

One commentator asked if Superfund monies could be used as seed money for a water distilling plan if the plan was limited to drinking and cooking purposes.

RESPONSE:

It appears unlikely that a water distilling plan could be funded by Superfund monies. The NCP states that initial remedial measures using Superfund monies can and should begin if such measures are determined to be feasible and necessary to limit exposure or threat of exposure to a significant health threat or environmental hazard, and such measures are cost effective. 40 C.F.R. Part 300.68(e)(1). The health threat at the Eau Claire Municipal Well Field is drinking water contaminated at the tap with volatile organic compounds. Although a water distilling plan, properly implemented, would remedy the health threat at Eau Claire, the costs of implementing such a plan would be so high that it would not be cost effective. Other

reliable technologies exist for dealing with the drinking water contamination problem at Eau Claire which are not as expensive as a water distilling plan.

COMMENT:

One commentator asked what technologies can be implemented under the Superfund program.

RESPONSE:

Any technology can be implemented as an IRM as long as it meets the qualifications as outlined in the NCP. 40 C.F.R. 300.68(e)(1). An IRM alternative must be: 1) feasible, 2) necessary to limit exposure to a significant health threat or environmental hazard, and 3) cost effective.

COMMENT:

The State commented that 2 private residential wells in the immediate vicinity of the EC Well Field are contaminated at levels greater than the contamination of the EC Well Field water. The State also indicated that no provisions have been identified in the FFS to address this problem.

RESPONSE:

The U.S. EPA is aware of the contamination of the D. and J. Hillman private residential wells located at 715 E. Riverview and 3714 Airport Road. The U.S. EPA has modified the current plan regarding the IRM to include an investigation of alternatives to remediate this contamination.

COMMENT:

The last comment involves private residential wells. The State commented that other private residential wells in the immediate vicinity of the EC Well Field may also be contaminated and asks the U.S. EPA to address this issue.

RESPONSE:

Currently, U.S. EPA does not possess any data that indicates contamination of private residential well at concentrations that pose a risk sufficient to justify an IRM (with the exception of the Hillman wells, discussed in the prior comment). The U.S. EPA recognizes, however, that other private wells in the immediate vicinity of the EC Well Field may currently be contaminated or will be further contaminated in the future. This potential risk is one of the reasons U.S. EPA is proceeding with a Remedial Investigation/Feasibility Study (RI/FS) at the EC Well Field site. The purpose of an RI/FS is to define the nature and extent of contamination at the EC Well Field and the surrounding vicinity. It is anticipated that the data generated by the RI/FS will identify any contamination in private residential wells in the immediate vicinity of the EC Well Field. If the data indicates that the levels of contamination exceed appropriate levels, the Agency will respond to the situation at that time. Should the situation warrant an immediate response prior to the implementation of a final remedy at the entire EC Well Field site, that action will be taken.

RECORD OF DECISION
SIGN-OFF

PROJECT NAME: Eau Claire Municipal Well Field

REMEDIAL PROJECT MANAGER: Joan Calabrese

RPM TELEPHONE NUMBER: 886-0403

1. INTERGOVERNMENTAL RELATIONS

State Coordinator [signature] for Tony Leffin 6/7/85 date

2. OFFICE OF REGIONAL COUNSEL

Site Attorney [signature] 6/7/85 date

Section Chief [signature] 6/7/85 date

SWERB Chief ______ date

Regional Counsel [signature] 6/7/85 date

3. WASTE MANAGEMENT DIVISION

Remedial Project Manager J. Calabrese 6/6/85 date

SMS, Unit Chief [signature] 6/7/85 date

SMS, Chief Vanderlaan 6/7/85 date

ERRB, Chief [signature] 6/7/85 date

CES, Project Manger [signature] 6/7/85 date

CES, Unit Chief [signature] 85/06/07 date

CES, Chief [signature] 6/7 date

HWEB, Chief [signature] 6/7 date

WMD, Deputy Director ______ date

WMD, Director [signature] 6/7 date

4. OTHER

DIVISION - Water Division

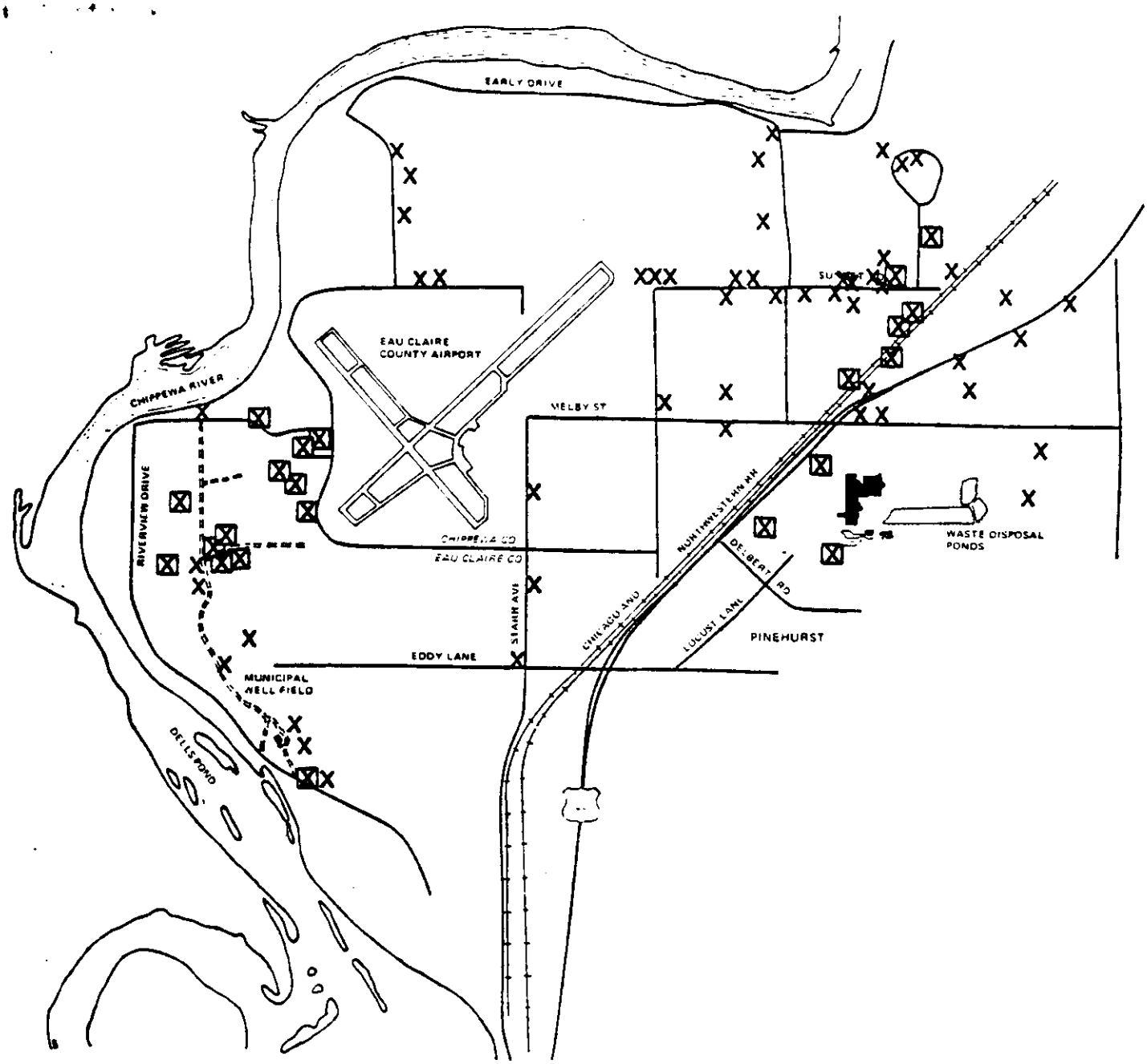
[signature] 6/7/85 date

D.W. Section, Chief [signature] 6/7/85 date

DIVISION - Air Management Division

TAS, Staff [signature] 6/7/85 date

AMD [signature] date



LEGEND

X WELL SAMPLES

⊠ WELL SAMPLES WITH CONTAMINANTS AT LEVELS GREATER THAN 1 X 10^{-6} CANCER RISK LEVEL.

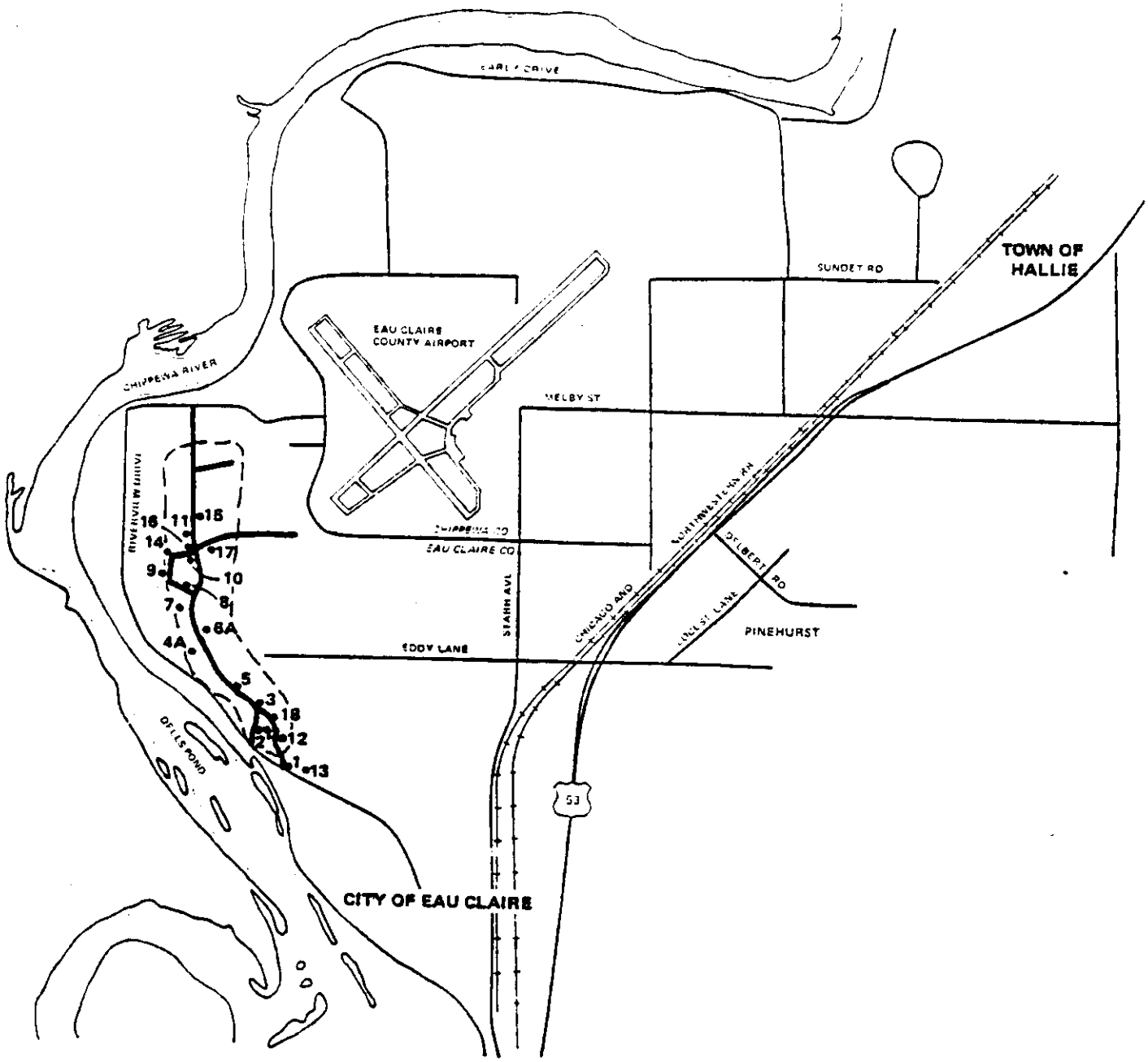
N

0 4000

2000

SCALE IN FEET

FIGURE 2
CONTAMINATED WELL DISTRIBUTION
EAU CLAIRE MUNICIPAL WELL FIELD



LEGEND

- MUNICIPAL WELL FIELD
- ACTIVE PRODUCTION WELLS

N

0 4000

2000

SCALE IN FEET

FIGURE 1
VICINITY MAP
EAU CLAIRE MUNICIPAL WELL FIELD

RECORD OF DECISION
SIGN-OFF

PROJECT NAME: Eau Claire Municipal Well Field

REMEDIAL PROJECT MANAGER: Joan Calabrese

RPM TELEPHONE NUMBER: 886-0403

1. INTERGOVERNMENTAL RELATIONS

State Coordinator Meg Canavan for Tony Leffin 6/7/85 date

2. OFFICE OF REGIONAL COUNSEL

Site Attorney Pamela Reban 6/7/85 date

Section Chief [illegible] 6/7/85 date

SWERB Chief _____ date

Regional Counsel Robert M. Anderson DRCLS 6/7/85 date

3. WASTE MANAGEMENT DIVISION

Remedial Project Manager J. Calabrese 6/6/85 date

SMS, Unit Chief [illegible] Rush 6/7/85 date

SMS, Chief [illegible] 6/7/85 date

ERRB, Chief [illegible] 6/7/85 date

CES, Project Manger [illegible] 6/7/85 date

CES, Unit Chief [illegible] 85/06/07 date

CES, Chief [illegible] 6/7 date

HWEB, Chief [illegible] 6/7 date

WMD, Deputy Director _____ date

WMD, Director [illegible] 6/7 date

4. OTHER

DIVISION - Water Division

Supply Water Section Staff Theresa Stevens 6/7/85 date

D.W. Section, Chief Harry Jon Anderson 6/7/85 date

DIVISION - Air Management Division

TAS, Staff John Summerhays 6/7/85 date

AMD Steve Rothblatt 6/7/85 date